



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 4
 ATLANTA FEDERAL CENTER
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 ATLANTA, GEORGIA 30303-8960

APR 8 9 2005

Paul E. Davis, Director
 Division of Water Pollution Control
 Tennessee Department of Environment and Conservation
 401 Church Street
 L&C Annex 6th Floor
 Nashville, TN 37243-0435

Dear Mr. Davis:

The Environmental Protection Agency (EPA) has received your March 16, 2005, letter concerning the Water Quality Control Board's (WQCB) approval for the Division of Water Pollution Control to proceed with initiation of a water quality standards rulemaking. As outlined in your letter, we understand that this review will be completed later this year and will address the areas of Tennessee's standards that have not received EPA approval.

We understand that the State is proposing to revise the following water quality criteria, for which EPA has not taken action, to levels which had been previously adopted by the State and approved by EPA: (1) the dissolved oxygen criteria for the Fish and Aquatic Life use for subcoregion 71i; (2) the pH criteria for the Fish and Aquatic Life use for subcoregion 65j (stream orders 1-2), 68a (stream orders 1-3), and 74b (all stream orders); and (3) the pH criteria for the Recreation use. In response to your request that EPA "...formally take 'no action' on these outstanding issues," EPA is not taking an action on these provisions under Clean Water Act (CWA) section 303(c) authorities. Therefore, the previous State-adopted and EPA-approved provisions of Tennessee standards relating to these criteria remain in effect for all purposes of the CWA.

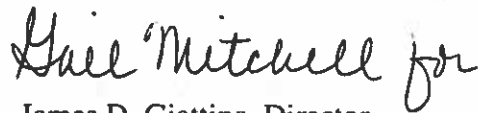
In addition, based on your letter dated September 10, 2004, we understand the State will change or remove the water quality standards provision regarding the use of a 30Q5 flow basis for application of nutrient criteria during the current rulemaking effort. As stated in a letter dated September 30, 2004, from my office to Ms. Betsy L. Child, Commissioner of the Tennessee Department of Environment and Conservation, EPA is not taking action on this provision under CWA section 303(c) authorities and the previous State-adopted and EPA-approved provisions of Tennessee standards remain in effect for all purposes of the CWA.

EPA would also like to take this opportunity to suggest other revisions to the current standards, including an update of water quality criteria values based on EPA's current Clean Water Act section 304(a) criteria guidance. We have included these suggestions and other comments on the State's water quality standards as an enclosure to this letter for your consideration during this triennial review process.

We would like to commend you and your staff for your continued efforts to protect and enhance Tennessee's waters and for the early start for this triennial review. My staff will be in contact with members of your program in order to set up a meeting with the Chattanooga field office of the U.S. Fish and Wildlife Service (the Service) in conjunction with our Memorandum of Agreement between EPA and the Service, and the requirement to discuss the extent of an upcoming review between the three agencies. We also request a meeting between our agencies during the same time frame to discuss our enclosed comments and other issues, as needed.

If you have any questions, please contact me at (404) 562-9345 or have a member of your staff contact Lauren Petter at (404) 562-9272.

Sincerely,

A handwritten signature in cursive script that reads "Gail Mitchell for". The signature is written in dark ink and is positioned above the typed name and title.

James D. Giattina, Director
Water Management Division

Enclosure

Considerations for 2005 Triennial Review

Comments and suggestions are organized by chapters and subchapters of Tennessee's water quality standards regulations. For some of the State's provisions, we are recommending that the State consider specific changes to the rule language. In those instances, the specific recommended language is underlined.

1200-4-3-.02 General Considerations

1. **1200-4-3-.02(2)** Should "trout streams" and "naturally reproducing trout streams" be included in this listing of uses?
2. **1200-4-3-.02(4)** What does the clause "i.e., modeling and stream survey assessments, treatment plants, or other control measures" refer to? It is not clear how "modeling and stream survey assessments, treatment plants, or other control measures" prevent "future pollution. Also, should the semicolon in this sentence be a comma?
3. **1200-4-3-.02(5)** For waters with multiple uses, it might be more clear to say: "Since all Waters of the State...In cases where criteria for protection of more than one use apply for a parameter at different stream flows (e.g., aquatic life versus recreation), each criterion for the parameter will apply at the appropriate stream flow. However, the most stringent criterion for the parameter, taking into account applicable flows and other implementation provisions, will be used to develop regulatory-based limits or control measures, e.g., effluent limits for NPDES permits."
4. **1200-4-3-.02(6)** What specific provisions of Tennessee water quality standards, other than this provision, apply to wet weather conveyances? What water quality criteria apply to ensure that these waters are "protective of humans and wildlife that may come in contact with them"? Do all the criteria within LWW & REC uses apply to wet weather conveyances?
5. **1200-4-3-.02(9)** What is meant by the first approach listed "(1) translator is the same as the conversion factor"? If this approach reflects the use of a linear partition coefficient consistent with EPA's guidance (i.e., "The Metal Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criteria (EPA-823-B-96-007)), we suggest the State consider the following clarification: "(1) translator using a linear partition coefficient consistent with the EPA guidance referenced below is the same as the conversion factor."
6. **1200-4-3-.02(9)** What is the process where "the Division develops or approves a site-specific criterion"? Is the result of this process considered to be a revised water quality standard? Does the State submit site-specific criteria to EPA for review under CWA section 303(c) authorities? Does the State consider this provision to be a performance-based standard that does not require EPA review and approval? What does the State consider the effective date for site-specific

criteria for CWA purposes? Also, it appears that, of the references listed on this subject, only the document *Interim Guidance on Determination and Use of Water-effect Ratios for Metals* addresses the development of site-specific criteria, i.e., water quality criteria that are based on the characteristics of a specific site.

7. It appears that subchapter **1200-4-3-.02(8)** does not exist.
8. Considering that the state has adopted certain water quality criteria based on natural conditions, with the intention that those natural conditions-based criteria should be protective for all uses for a water body or waterbodies in a subcoregion, it might be appropriate to include a clarification to that effect in a new provision. Also, a cross-reference or similar text could be included at each listing of water quality criteria where this applies. Perhaps language similar to the following could be added as a paragraph within the general considerations section: "In cases where a water quality criterion for a parameter has been adopted for a water body or for the water bodies in an ecoregion, based on naturally-occurring conditions for that parameter, the natural condition-based criterion shall apply for all classified uses."

1200-4-3-.03 Criteria for Water Uses

DWS-

9. **1200-4-3-.03(1)(j)** This provision (and other sections addressing individual uses) includes a reference to *Quality Criteria for Water*, with no publication date. Since EPA has moved away from publishing updated editions of this document, it may be more appropriate to also include the most recent Federal Register notice published by EPA that provides a listing of the current CWA section 304(a) water quality criteria guidance. The links below include the locations where updated 304(a) criteria can be found for both aquatic and human health criteria.
Aquatic Life link: <http://www.epa.gov/waterscience/criteria/aqlife.html>
(Includes 2002 values and finalized criteria EPA documents for some pollutants)
2002 304(a): EPA-822-R-02-047; November 2002, Human Health Matrix: EPA-822-R-02-012; November 2002 TBT: EPA 822-R-03-031
Human Health link: <http://epa.gov/waterscience/humanhealth/15table-fs.htm>
(Includes 15 criteria updated after 2002 publication) EPA-822-F-03-012;
December 2003

FAL-

10. **1200-4-3-.03(3)(e)** We suggest you consider adding definitions of "epilimnion" and "hypolimnion" within section 1200-4-3-.04 of your regulations.
11. **1200-4-3-.03(3)(g)** We suggest the State update its criteria to be consistent with EPA's current Clean Water Act (CWA) section 304(a) recommendations. Please refer to the table below for a summary of our recommendations and comments.

Parameter	Current TN criteria	CWA § 304(a) criteria	Notes/Questions
Chromium (III)	None	CMC: 570 ug/l CCC: 74 ug/l	Values from 2002 304(a) recommendations
Selenium	CMC: 20 µg/l CCC: 5 µg/l	2002 304(a) recommendations: CMC: None CCC is still 5µg/l	Criteria document currently under development by EPA, Notice of Draft Selenium Aquatic Life Criteria and request for information published December 17, 2004.
g-BHC (Lindane)	CMC: 2.0 µg/l CCC: 0.08 µg/l	2002 304(a) recommendations: CMC: 0.95 µg/l CCC: N/A	More recent update applies to human health criteria and are discussed later
PCBs	CMC: N/A CCC: 0.014 µg/l for each aroclor	2002 304(a) recommendations: CMC: N/A CCC: 0.014 µg/l for total PCBs...e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.	EPA's CCC no longer is "per aroclor" but instead intended as the CCC for the "total PCBs".
Tributyltin (TBT)	CMC: N/A CCC: N/A	January 2004 recommendation: CMC: 0.46 µg/l CCC: 0.072 µg/l	Federal Register: January 5, 2004 (Volume 69, Number 2) Page 342-343

12. **1200-4-3-.03(3)(i)** Nutrients – The nutrient plan submitted November 9, 2004, includes the following milestone for 2005, "Initiate next triennial review of water quality standards. Explore interest in revival of numeric stream criteria recommendations." Does the State intend to adopt any specific revisions to its nutrient criteria?
13. **1200-4-3-.03(3)(k)** What is meant by "The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or adversely affected, *except as allowed under 1200-4-3-.06...*"? The provisions of 1200-4-3-.06 allow lowering of water quality under certain circumstances, but not to the degree or extent that either existing or designated uses will not be attained or maintained. Does the State consider that

there are circumstances where diversity and/or productivity of aquatic biota (or water quality) could be “substantially decreased or adversely affected,” but existing and designated uses will still be protected?

14. **1200-4-3-.03(3)(k)** We suggest the State consider adding the following language to the last sentence: “... or to appropriately selected reference sites in the same bioregion if upstream conditions are determined to be degraded, or otherwise not appropriate.”
15. **1200-4-3-.03(3)(l)** We suggest you consider adding definitions of the term(s) “biological integrity goal” and/or “regionally-based biological integrity goal” within section 1200-4-3-.04 of your regulations.

REC-

16. **1200-4-3-.03(4)(h)** Same suggestion as for 1200-4-3-.03(3)(i)

17. **1200-4-3-.03(4)(i)** We suggest the State update its criteria to be consistent with EPA’s current Clean Water Act (CWA) section 304(a) recommendations. Please refer to the table below for a summary of our recommendations and comments.

Parameter	Current TN criteria	CWA § 304(a) criteria	Notes/Questions
Arsenic	Water & Org. 10.0 µg/l Org. Only 10.0 µg/l	Water & Org. 0.018 µg/l Org. Only: 0.14 µg/l (values based on risk level 10 ⁻⁶ , refers to inorganic form only)	EPA is currently reassessing the human health criteria for arsenic.
Methylmercury	None	Org. Only: 0.3 mg/kg based on a total fish consumption rate of 0.0175 kg/day	EPA withdrew its previous criteria for mercury in 1/8/01 FR notice. Methylmercury implementation guidance not yet complete.
Dioxin	Water & Org. : 0.000001 µg/l Org. Only: 0.000001 µg/l	Water & Org.: 5.0E-9 µg/l (based on 10 ⁻⁶ risk) Org. Only: 5.1E-9 µg/l (based on 10 ⁻⁶ risk)	
PCBs	Individual and Total	Total only	See PCB discussion under FAL use
Thallium	Water & Org.: 1.7 µg/l Org. Only: 6.3 µg/l	Water & Org.: 0.24 µg/l Org. Only: 0.47 µg/l	
Cyanide (total)	Water & Org.: 700 µg/l Org. Only: 220,000 µg/l	Water & Org.: 140 µg/l Org. Only: 140* µg/l	*This recommended water quality criterion is expressed as total cyanide, even though the IRIS RfD used to derive the criterion is

			based on free cyanide.
Chlorobenzene	Water & Org.: 680 µg/l Org. Only: 21,000 µg/l	Water & Org.: 130 µg/l Org. Only: 1,600 µg/l	
1,1-Dichloroethylene	Water & Org.: 0.57 µg/l Org. Only: 32 µg/l	Water & Org.: 330 µg/l Org. Only: 7,100 µg/l	
1,3-Dichloropropene	Water & Org.: 10 µg/l Org. Only: 1,700 µg/l	Water & Org.: 0.34 µg/l Org. Only: 21 µg/l	
Ethylbenzene	Water & Org.: 3,100 µg/l Org. Only: 29,000 µg/l	Water & Org.: 530 µg/l Org. Only: 2,100 µg/l	
Toluene	Water & Org.: 6,800 µg/l Org. Only: 200,000 µg/l	Water & Org.: 1,300 µg/l Org. Only: 15,000 µg/l	
1,2-Trans-Dichloro-ethylene	Water & Org.: 700 µg/l Org. Only: 140,000 µg/l	Water & Org.: 140 µg/l Org. Only: 10,000 µg/l	
Vinyl Chloride	Water & Org.: 20 µg/l Org. Only: 5,300 µg/l	Water & Org.: 0.025 µg/l Org. Only: 2.4 µg/l	
1,2-Dichlorobenzene	Water & Org.: 2,700 µg/l Org. Only: 17,000 µg/l	Water & Org.: 420 µg/l Org. Only: 1,300 µg/l	
1,4-Dichlorobenzene	Water & Org.: 400 µg/l Org. Only: 2,600 µg/l	Water & Org.: 63 µg/l Org. Only: 190 µg/l	
Hexachlorocyclopentadiene	Water & Org.: 240 µg/l Org. Only: 17,000 µg/l	Water & Org.: 40 µg/l Org. Only: 1,100 µg/l	
1,2,4-Trichlorobenzene	Water & Org.: 260 µg/l Org. Only: 940 µg/l	Water & Org.: 35 µg/l Org. Only: 70 µg/l	
Lindane	Water & Org.: 0.19 µg/l Org. Only: 0.63 µg/l	Water & Org.: 0.98 µg/l Org. Only: 1.8 µg/l	
Endrin	Water & Org.: 0.76 µg/l Org. Only: 0.81 µg/l	Water & Org.: 0.059 µg/l Org. Only: 0.060 µg/l	
Fish consumption rate	6.5 g/day	17.5 g/day	

1200-4-3-.05 Interpretations of Criteria

18. **1200-4-3-.05(2)** We suggest the State consider revising the mixing zone policy to include a prohibition of any mixing zones that jeopardize the continued existence of any endangered or threatened aquatic species listed under Section 4 of the Federal Endangered Species Act, or result in the destruction or adverse modification of their critical habitat. (For your information, Kentucky and Mississippi have water quality standards regulations that include such a prohibition.)
19. **1200-4-3-.05(4)** What is the definition of the "minimum critical flow" that occurs once in ten years for regulated streams?
20. **1200-4-3-.05(7)** Does application of this provision result in a revised water quality criterion? Does it involve adoption through the routine water quality standards administrative process? For your information, a copy of EPA's "Site-Specific Criteria Development" memorandum dated November 5, 1997, is attached.
21. **1200-4-3-.05(9)** We suggest the State consider adding clarity to this provision as follows: "The criteria for metals shall be applied ..."

1200-4-3-.06 Antideg

22. This section discusses requirements for "Tier II" and "Tier III" waters, but also refers to these waters as "Tier 2" and "Tier 3" waters. We suggest the State use consistent terminology.
23. We suggest the State modify the format for clarity since it appears that subpart (2) has been used twice in the section. For example, subpart (1) could be turned into (1)(a) and the first subpart (2) could be turned into (b).
24. We suggest the State consider revising the third paragraph of subpart (2) as follows: "For authorized new or expanded discharges, a record of the tentative and final antidegradation determinations will be maintained ..."



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 5 1997

OFFICE OF
WATER

MEMORANDUM

SUBJECT: Establishing Site Specific Aquatic Life Criteria Equal to Natural Background

FROM: Tudor T. Davies, Director
Office of Science and Technology *Tudor T. Davies*

TO: Water Management Division Directors, Regions 1-10
State and Tribal Water Quality Management Program Directors

In the course of reviewing State and Tribal water quality standards (WQS), EPA has identified several issues pertaining to the establishment of site specific numeric criteria on the basis of natural background conditions. EPA is issuing this policy to provide greater clarity and direction for States and Tribes who are considering establishing site specific criteria equal to natural background conditions, and for EPA Regional Offices reviewing State and Tribal water quality management programs.

Background

Site specific criteria are allowed by regulation and are subject to EPA review and approval. The Federal water quality standards regulation at 40 CFR 131.11(b)(1) requires States and authorized Tribes to adopt numeric water quality criteria that are based on section 304(a) criteria, section 304(a) criteria modified to reflect site-specific conditions, or other scientifically defensible methods. Under 40 CFR 131.5(a)(2), EPA reviews State WQS to determine whether a State has adopted criteria to protect the designated uses. Existing guidance and practice are that EPA will approve site specific criteria developed on the basis of sound scientific rationales.

Currently, EPA guidance has specified three procedures for States and Tribes to follow in deriving site specific criteria. These are the Recalculation Procedure, the Water-Effect Ratio Procedure and the Resident Species Procedure. These procedures can be found in the *Water Quality Standards Handbook* (EPA-823-B940005a, 1994). EPA also recognizes there may be naturally occurring concentrations of pollutants which may exceed the national criteria published under section 304(a) of the Clean Water Act.

Policy

This policy applies only to site specific numeric aquatic life criteria based on natural background. States and Tribes may establish site specific numeric aquatic life water quality criteria by setting the criteria value equal to *natural* background. Natural background is defined as background concentration due *only* to non-anthropogenic sources, i.e., non-manmade sources. In setting criteria equal to natural background the State or Tribe should, at a minimum, include in their water quality standards:

- (1) a definition of natural background consistent with the above;
- (2) a provision that site specific criteria may be set equal to natural background;
- (3) a procedure for determining natural background, or alternatively, a reference in their water quality standards to another document describing the binding procedure that will be used.

Discussion

A State or Tribal procedure for determining natural background will need to be specific enough to establish natural background concentration accurately and reproducibly. States and Tribes should also provide for public notice and comment on the definition, the provision, the procedure and the site specific numeric criteria derived from the procedure. The State or Tribe will need to document the resulting site specific numeric criteria in the State or Tribal water quality standards, including specifying the water body segment to which the site specific criteria apply. This can be accomplished through adopting the site specific criteria into the State or Tribal WQS, or, alternatively, by appending the site specific criteria to the WQS. In either case, the State or Tribe must comply with the public participation requirements of 40 CFR 131.20 and 40 CFR Part 25, and State and Tribal citizens should be able to readily determine the water quality criteria applicable to specific water bodies.

For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans. The State or Tribe should consider refining the designated use for the water body to more precisely define the existing aquatic life use.

This policy does not apply to human health uses. For human health uses, where the natural background concentration is documented, this new information should result in, at a minimum, a re-evaluation of the human health use designation. Where the new background information documents that the natural background concentration does not support a human health use previously believed attained, it may be prudent for the State or Tribe to change the human health use to one the natural background concentration will support (e.g., from drinking water supply to drinking water supply only after treatment).

Conclusion

This policy explains and clarifies the use of natural background conditions in establishing site specific criteria for protection of aquatic life uses. In addition to the three procedures listed above for deriving site specific criteria as discussed above, States and Tribes can address natural background conditions through refining the designated use to more accurately reflect the aquatic community present within the stream segment. EPA recognizes that there are other options available to States/Tribes to account for other ambient conditions (e.g., concentrations due to non-natural, man-made conditions) which exceed the national criteria. One such option is for a State or Tribe to conduct a Use Attainability Analysis, consistent with the requirements of 40 CFR 131.10, and adopt a use which is less than the 101(a) goal uses of the Clean Water Act, e.g., less than "fishable/swimmable", or modify a 101(a) goal use such that less stringent criteria are required. In any case, the existing uses of the water body segment must be maintained and protected.

If you have any questions or concerns regarding this policy, please contact me or have your staff contact Elizabeth Southerland, Acting Director, Standards and Applied Science Division, at 202-260-3966.

cc: Lepow, OGC
Wayland, OWOW
Cook, OWM
Dougherty, OGWDW